

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 10/527,668
Applicant : Satoshi Kawaguchi et al
Filed : March 11, 2005
Patent No. : 7,464,741
Issue Date : December 16, 2008
Title : PART FEEDING DEVICE AND PART FEEDING METHOD

Conf. No. : 1734
TC/A.U. : 7249
Examiner : Mark A. Osele

Customer No. : 52054
Docket No. : NGB-37938

CERTIFICATE OF CORRECTION TRANSMITTAL LETTER

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

A Certificate of Correction under 35 U.S.C. 254 is hereby requested to correct Patent Office printing errors in the above-identified patent. Enclosed herewith is a proposed Certificate of Correction (Form No. PTO-1050) for consideration. Also enclosed is documentation in support of this request.

It is requested that the Certificate of Correction be completed and mailed at an early date to the undersigned attorney of record. The proposed corrections are obvious ones and do not in any way change the sense of the application.

We understand that a check is not required since the errors were on the part of the Patent and Trademark Office in printing the patent.

Respectfully submitted,
PEARNE & GORDON LLP

By: /jeffrey j sopko/
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Date: February 6, 2009

UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 1 of 1

PATENT NO. : 7,464,741

APPLICATION NO.: 10/527,668

ISSUE DATE : December 16, 2008

INVENTOR(S) : Satoshi Kawaguchi, Teruo Kawaguchi, Kiyoshi Imai, Koji Okawa, Shuichi Kubota

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 5, line 7, please complete the sentence by inserting --the adhesive face, and a width of the crease roller is almost identical to a dimension between both collars.

(6) When doing this, the crease is formed on places from which the top tape is to be lifted, and then the top tape can be lifted easily when such top tape comes up to the lifting roller.--

In column 5, line 48, please start a new paragraph beginning with the word: "Further".

In column 6, line 16 please delete "(8)" and insert therefor --(7)--.

In column 6, line 43, please delete text beginning in column 6, line 43 starting with "In" and continuing up to column 7, line 23 ending with "be".

In column 8, line 33, please delete lines 32 through 48.

In column 22, line 27, please delete "rush" and please insert therefore --push--.

MAILING ADDRESS OF SENDER (Please do not use customer number below):

Pearne & Gordon LLP
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Cleveland, OH 44114

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: **Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Appl. No. 10/527,668
Amdt. Dated July 7, 2008
Reply to Office action of April 7, 2008

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 10/527,668
Applicant : Satoshi Kawaguchi et al.
Filed : March 11, 2005
Title : PART FEEDING DEVICE AND PART FEEDING METHOD

Conf. No. : 7249
TC/A.U. : 1791
Examiner : Mark A. Osele

Customer No. : 000,116
Docket No. : 37938

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT "B"

Sir:

This amendment is filed in response to the Office action dated April 7, 2008 (Paper No. 20080331). The three-month period for responding to the Office action expires on July 7, 2008.

Please amend the above-identified application in the following manner.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 5 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claims 1-7 (Canceled)

Claim 8 (Previously presented): A parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a pair of winding drums detachably attached to a driving shaft that rotates/drives the reel member, having a winding surface on respective outer peripheral surfaces, and divided in two in an axial direction, one part being detachably attached to the driving shaft, and

a guide flange formed on one end face of one winding drum, whereby the top tape is wound on winding surfaces of the pair of winding drums.

Claim 9 (Previously presented): A parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a pair of winding drums detachably attached to a driving shaft that rotates/drives the reel member, having a winding surface on respective outer peripheral surfaces, and divided in two in an axial direction, one part being detachably attached to the driving shaft, and

a guide flange formed on one end face of one winding drum, whereby the top tape is wound on winding surfaces of the pair of winding drums,

the pair of winding drums have a tapered winding surface whose outer diameter is increased large in a direction that goes away from the guide flange, and

an outer diameter of an end face of the other winding drum opposing to one end face of one winding drum is smaller than an outer diameter of the other end face of one winding drum.

Claims 10-12 (Canceled):

Claim 13 (Currently amended): A parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a winding drum detachably attached to a driving shaft that rotates/drives the reel member and having a recess portion that is hollowed inwardly in a radial direction in a part of a circumference, and

a guide flange formed on one end face of the winding drum and having an opening portion,

wherein the opening portion allows a finger to be inserted to (push) a side surface of the top tape wound on the winding drum. The parts supplying system according to claim 10,

wherein the inner wall surfaces opposing to each other at both ends of the recess portion in a circumferential direction are formed as a tapered surface that expands outwardly in a radial direction.

Claim 14 (Canceled):

Claim 15 (Currently amended): The parts supplying system according to ~~any one of~~ claim ~~[[7,]]~~8, ~~10 or 11~~, wherein an inner side surface of the guide flange is formed as an inclined surface that reduces a thickness of the guide flange outwardly in the radial direction of the guide flange.

REMARKS/ARGUMENTS

Claims 8, 9, 13 and 15(8) are allowed.

Claims 1-7, 10-12, 14 and 15(7, 10, 11) are canceled.

Claim Rejections – 35 USC §102

Claims 7 and 11 are rejected under 35 U.S.C. 102 (b) as being anticipated by Japanese Patent Publication 02-274431 (Kurihara et al.).

Claims 7 and 11 have been canceled. Thus, the rejection as it applies to claims 7 and 11 is moot.

Claim Rejections – 35 USC §103

Claims 12(7, 11) and 15(7, 11) are rejected under U.S.C. 103(a) as being unpatentable over Japanese Patent Publication 02-274431 (Kurihara et al.) in view Japanese Patent Publication 11-046091 (Kubota).

Claims 12(7, 11) and 15(7, 11) have been canceled. Thus, the rejection as it applies to claims 12(7, 11) and 15(7, 11) is moot.

Claims 10 and 14 are rejected under U.S.C. 103(a) as being unpatentable over Japanese Patent Publication 02-274431 (Kurihara et al.) in view Ando et al. (U.S. 5,598,986).

Claims 10 and 14 have been canceled. Thus, the rejection as it applies to claims 10 and 14 is moot.

Claims 12(10) and 15(10) are rejected under U.S.C. 103(a) as being unpatentable over Japanese Patent Publication 02-274431 (Kurihara et al.) in view Ando et al. (U.S. 5,598,986) as applied to claim 10 above, and further in view of Japanese Patent Publication 11-046091 (Kubota).

Claims 12(10) and 15(10) have been canceled. Thus, the rejection as it applies to claims 12(10) and 15(10) is moot.

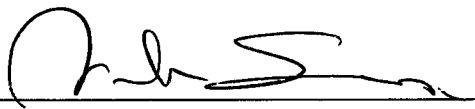
In consideration of the foregoing analysis, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

Appl. No. 10/527,668
Amdt. Dated July 7, 2008
Reply to Office action of April 7, 2008

If there are any fees resulting from this communication, please charge same to our
Deposit Account No. 16-0820, our Order No. NGB-37938 .

Respectfully submitted,

PEARNE & GORDON LLP

By: 

Nobuhiko Sukenaga, Reg. No. 39446

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July 7, 2008

AMENDMENT

(Amendment pursuant to Patent Law, Article 11)

Attn: Commissioner of the Patent Office

(Examiner Makoto Suenaga of the Patent Office)

1. INDICATION OF INTERNATIONAL APPLICATION

PCT/JP03/087993

2. APPLICANT

Appellation: Matsushita Electric Industrial Co., Ltd.

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Tokyo 107-6028 JAPAN

4. OBJECT OF AMENDMENT

Specification and Claims

5. CONTENT OF AMENDMENT

(1) In the specification, page 7, lines 28 - 29:

“an opening portion through which a side surface of the top tape wound on the winding drum is pushed” is amended to “an opening portion through which a side surface of the top tape wound on the winding drum is pushed directly with a finger”.

(2) In the specification, page 8, lines 12 - 24:

“A parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a pair of winding drums detachably attached to a driving shaft that rotates/drives the reel member, having a winding surface on respective outer peripheral surfaces, and divided in two in an axial direction, one part being detachably attached to the driving shaft, and

a guide flange formed on one end face of one winding drum,
whereby the top tape is wound on winding surfaces of the pair of winding drums” is amended to:

“A parts supplying system set forth in (7),

wherein the reel member includes

a pair of winding drums detachably attached to a driving shaft that rotates/drives the reel member, having a winding surface on respective outer

peripheral surfaces, and divided in two in an axial direction, one part being detachably attached to the driving shaft, and

a guide flange formed on one end face of one winding drum, whereby the top tape is wound on winding surfaces of the pair of winding drums.”

(3) In the specification, page 8, line 34:

“Therefore, like the case in above (8),” is amended to “Therefore, like the case in above (7),”.

(4) In the specification, page 9, lines 5 - 7:

“A parts supplying system set forth in (8), the pair of winding drums have a tapered winding surface whose outer diameter is increased large in a direction that goes away from the guide flange, and an outer diameter of an end face of the other winding drum opposing to the other end face of one winding drum is smaller than an outer diameter of the other end face of one winding drum” is amended to:

“A parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a pair of winding drums detachably attached to a driving shaft that rotates/drives the reel member, having a winding surface on respective outer

peripheral surfaces, and divided in two in an axial direction, one part being detachably attached to the driving shaft, and

a guide flange formed on one end face of one winding drum,
whereby the top tape is wound on winding surfaces of the pair of winding drums,

the pair of winding drums have a tapered winding surface whose outer diameter is increased large in a direction that goes away from the guide flange, and

an outer diameter of an end face of the other winding drum opposing to the other end face of one winding drum is smaller than an outer diameter of the other end face of one winding drum”.

(5) In the specification, page 9, lines 24 - 33:

“A parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a winding drum detachably attached to a driving shaft that rotates/drives the reel member and having a recess portion that is hollowed inwardly in a radial direction in a part of a circumference, and

a guide flange formed on one end face of the winding drum.” is amended to:

“A parts supplying system set forth in Claim 7,

wherein the reel member includes

a winding drum detachably attached to a driving shaft that rotates/drives the reel member and having a recess portion that is hollowed inwardly in a radial direction in a part of a circumference, and

a guide flange formed on one end face of the winding drum”.

(6) In the specification, page 10, lines 12 - 24:

“A reel member of a parts supplying system capable of ...are bent in removing from the driving shaft to position the winding drum on an inner side and the guide flange on an outer side. In the reel member of this parts supplying system,” is amended to:

“A parts supplying system capable of ...are bent in removing from the driving shaft to position the winding drum on an inner side and the guide flange on an outer side. In this parts supplying system,”.

(7) In Claim 7:

“an opening portion through which a side surface of the top tape wound on the winding drum is pushed” is amended to “an opening portion through which a side surface of the top tape wound on the winding drum is pushed directly with a finger”.

(8) In claim 8:

“A parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts

and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a pair of winding drums detachably attached to a driving shaft that rotates/drives the reel member, having a winding surface on respective outer peripheral surfaces, and divided in two in an axial direction, one part being detachably attached to the driving shaft, and

a guide flange formed on one end face of one winding drum, whereby the top tape is wound on winding surfaces of the pair of winding drums” is amended to:

“A parts supplying system according to claim 7,

wherein the reel member includes

a pair of winding drums detachably attached to a driving shaft that rotates/drives the reel member, having a winding surface on respective outer peripheral surfaces, and divided in two in an axial direction, one part being detachably attached to the driving shaft, and

a guide flange formed on one end face of one winding drum, whereby the top tape is wound on winding surfaces of the pair of winding drums.”

(9) In claim 9:

“The parts supplying system according to claim 8, wherein the pair of winding drums have a tapered winding surface whose outer diameter is increased large in a direction that goes away from the guide flange, and an outer diameter of an end face of the other winding drum opposing to the

other end face of one winding drum is smaller than an outer diameter of the other end face of one winding drum.”

is amended to:

“A parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a pair of winding drums detachably attached to a driving shaft that rotates/drives the reel member, having a winding surface on respective outer peripheral surfaces, and divided in two in an axial direction, one part being detachably attached to the driving shaft, and

a guide flange formed on one end face of one winding drum,

whereby the top tape is wound on winding surfaces of the pair of winding drums,

the pair of winding drums have a tapered winding surface whose outer diameter is increased large in a direction that goes away from the guide flange, and

an outer diameter of an end face of the other winding drum opposing to the other end face of one winding drum is smaller than an outer diameter of the other end face of one winding drum”.

(10) In claim 10:

“A parts supplying system capable of taking out an electronic parts

from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a winding drum detachably attached to a driving shaft that rotates/drives the reel member and having a recess portion that is hollowed inwardly in a radial direction in a part of a circumference, and

a guide flange formed on one end face of the winding drum.” is amended to:

“A parts supplying system according to Claim 7,

wherein the reel member includes

a winding drum detachably attached to a driving shaft that rotates/drives the reel member and having a recess portion that is hollowed inwardly in a radial direction in a part of a circumference, and

a guide flange formed on one end face of the winding drum”.

(11) In claim 11:

“A reel member of a parts supplying system capable of ...” is amended to:

“A parts supplying system capable of ...”.

6. LIST OF ATTACHED DOCUMENTS

- (1) Specification, pages 7 and 7/1
- (2) Specification, pages 8 and 8/1
- (3) Specification, page 9

- (4) Specification, page 10
- (5) Claim, page 29
- (6) Claim, pages 30 and 30/1
- (7) Claim, pages 31 and 31/1
- (8) Claim, page 32

PAGES 7 AND 7/1

A parts supplying method of releasing a top tape pasted onto a carrier tape from the carrier tape to carry when a parts housed in the carrier tape is supplied by feeding intermittently a taped-component, in which the top tape having an adhesive face on both end portions in a width direction is pasted releasably on the carrier tape in which the parts is stored, to a parts supplying position,

wherein a predetermined length of the released top tape is lifted by almost 90 degree to direct respective adhesive faces on both ends of the top tape inwardly, the top tape is folded by tilting a lifted top tape toward a not-lifted top tape, and the folded top tape is fed every predetermined pitch.

When doing this, the top tape can be lifted by almost 90 degree to direct respective adhesive faces on both ends inwardly by merely passing the top tape through the top tape carrying portion and also the lifted portion of the top tape is tilted inwardly to come into tight contact with the not-lifted portion.

(7) A parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a winding drum detachably attached to a driving shaft, and

a guide flange formed on one end face of the winding drum and having an opening portion through which a side surface of the top tape wound on the winding drum is pushed directly with a finger.

When doing this, the method of removing collectively the top tape from the winding drum in the axial direction by detaching the reel member from the driving shaft and then applying the force to the side surface of the top tape through the opening portion of the guide flange can be employed as the method of removing the top tape wound on the reel member. Therefore, the pushing force of the finger can be applied directly to the side surface of the top tape that is wound tightly and densely on the winding drum, and removal of the top tape from the reel member can be executed easily and quickly without fail.

Further, in the parts supplying system having the above structure, the opening portion through which the side surface of the top tape can be pushed is provided in the guide flange formed on one end face of the winding drum, and then the top tape wound on the winding drum can be removed by pushing directly the tape by the finger. Therefore, the ring as the separated member can be omitted and the inoperable state of the parts supplying system because of loss of the ring is not caused.

PAGES 8 AND 8/1

In addition, there is no necessity to remove the ring by using the jig and thus time and labor required for the jig operation is not needed. Further, the ring and the jig are not needed, the cost of equipment of them is not generated.

(8) "A parts supplying system set forth in (7),

wherein the reel member includes

a pair of winding drums detachably attached to a driving shaft that rotates/drives the reel member, having a winding surface on respective outer peripheral surfaces, and divided in two in an axial direction, one part being detachably attached to the driving shaft, and

a guide flange formed on one end face of one winding drum,

whereby the top tape is wound on winding surfaces of the pair of winding drums.

In the reel member of this parts supplying system, the top tape is wound on a pair of winding drums to spread over the winding surfaces respectively. That is, one end side of the top tape in the width direction is wound on one winding drum whereas the other end side in the width direction is wound on the other winding drum. Therefore, the top tape is still wound only on one winding drum by separating a pair of winding drums on which the top tape is wound. As a result, the contact friction between the top tape and the winding surfaces can be reduced largely and thus removal of the top tape from the winding drum can be made easy.

Therefore, like the case in above (8), the method of removing the top tape, which is wound tightly and densely on the winding drum, from the winding drum collectively, easily, and quickly without fail in the axial direction

can be employed.

(9) A parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a pair of winding drums detachably attached to a driving shaft that rotates/drives the reel member, having a winding surface on respective outer peripheral surfaces, and divided in two in an axial direction, one part being detachably attached to the driving shaft, and

a guide flange formed on one end face of one winding drum, whereby the top tape is wound on winding surfaces of the pair of winding drums,

the pair of winding drums have a tapered winding surface whose outer diameter is increased large in a direction that goes away from the guide flange, and

an outer diameter of an end face of the other winding drum opposing to the other end face of one winding drum is smaller than an outer diameter of the other end face of one winding drum.

In the reel member of this parts supplying system, respective winding surfaces of a pair of winding drums are formed

PAGE 9

as tapered surfaces in the same direction, and in addition the outer diameter of the other winding drum opposing to the other end face of one winding drum is formed smaller than an outer diameter of the other end face of one winding drum. Thus, a level difference is formed at the boundary portion between the winding drums. Therefore, if a pair of winding drums on which the top tape is wound can be separated by forming the level difference at the boundary portion between the winding drums, not only both winding drums can be separated in the situation that the top tape is put on one winding drum and held thereon but also a contact friction between the other winding drum and the top tape can be reduced by the level difference and the tapered surfaces and a separating force can be reduced.

Therefore, like the case in above (8), the method of removing the top tape, which is wound tightly and densely on the winding drum, from the winding drum collectively, easily, and quickly without fail in the axial direction can be employed.

(10) A parts supplying system set forth in Claim 7,

wherein the reel member includes

a winding drum detachably attached to a driving shaft that rotates/drives the reel member and having a recess portion that is hollowed inwardly in a radial direction in a part of a circumference, and

a guide flange formed on one end face of the winding drum".

In the reel member of this parts supplying system, the top tape wound on the winding surface of the winding drum does not contact to the winding surface in the recess portion and can be deformed in the depth direction of the

recess portion. In other words, the wound top tape is ready to be removed from the winding surface if the top tape is deformed (crashed) in the direction along which such top tape is pushed into the recess portion. In this manner, if a part of the wound top tape in the circumferential direction is removed in the recess portion, a winding/clamping force generated by winding the tape on the whole circumference of the winding surface disappears, and thus the wound top tape is ready to be removed collectively from the winding drum.

Therefore, like the case in above (8), the method of removing the top tape, which is wound tightly and densely on the winding drum, from the winding drum collectively, easily, and quickly without fail in the axial direction can be employed.

PAGES 10

(11) A parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a winding drum detachably attached to a driving shaft that rotates/drives the reel member, and

a guide flange formed on one end face of the winding drum,

whereby the winding drum and the guide flange are bent in removing from the driving shaft to position the winding drum on an inner side and the guide flange on an outer side.

In this parts supplying system, since the winding drum and the guide flange are bent in removing from the driving shaft to position the winding drum on the inner side and the guide flange on the outer side, the winding/tightening force of the wound top tape disappears and thus the wound top tape can be removed from the winding surface. Therefore, the wound top tape can be removed simply from the winding surface.

Therefore, like the case in above (8), the method of removing the top tape, which is wound tightly and densely on the winding drum, from the winding drum collectively, easily, and quickly without fail in the axial direction can be employed.

(12) In the parts supplying system set forth in any one of (7), (10) or (11), the winding drum has a tapered winding surface whose outer diameter is

increased large in a direction that goes away from the guide flange.

In the reel member of this parts supplying system, the top tape that is wound along the guide flange side, and thus the top tape can always be wound stably on the winding surface. As a result, the attaching/detaching operation of the winding drum can be facilitated. Also, the rotating resistance of the winding ratchet can be reduced, the deformation of the winding ratchet can be prevented, and the winding failure is not generated.

Therefore, like the case in above (8), the method of removing the top tape, which is wound tightly and densely on the winding drum, from the winding drum collectively, easily, and quickly without fail in the axial direction can be employed.

(13) In the parts supplying system set forth in (10), inner wall surfaces opposing to on both ends of the recess portion in a circumferential direction are

CLAIMS

1. A parts supplying system comprising a top tape carrying portion for releasing a top tape pasted onto a carrier tape from the carrier tape to carry when a parts housed in the carrier tape is supplied by feeding intermittently a taped-component, in which the top tape having an adhesive face on both end portions in a width direction is pasted releasably on the carrier tape in which the parts is stored, to a parts supplying position,

wherein the top tape carrying portion includes a tape lifting portion for lifting a predetermined length of the top tape by almost 90 degree to direct respective adhesive faces on both ends inwardly, a tape folding portion for folding the top tape by tilting a lifted top tape toward a not-lifted top tape, and a tape discharging portion for feeding the folded top tape every predetermined pitch.

2. The parts supplying system according to claim 1, wherein the tape lifting portion consists of at least one lifting roller, the lifting roller is a roller having a collar on both ends, a dimension between both collars is almost equal to a width dimension of a not-lifted top tape, the released top tape is passed on the lifting roller to direct an adhesive face upwardly, and the lifting roller lifts up the top tape that is passed on the collars along the collars by almost 90 degree, and

the tape folding portion consists of a folding roller, the folding roller is positioned in an opposite direction to a direction along which the top tape is lifted to apply a tension to the not-lifted top tape and then folds the top tape by

tilting the lifted top tape toward the not-lifted top tape.

3. The parts supplying system according to claim 2, wherein a part of the collars of the lifting roller is notched, the top tape is kept in a flat state in a collar-notched portion, and the top tape that is passed on the collars is lifted along the collars by almost 90 degree in a collar-not-notched portion.

4. The parts supplying system according to claim 2, wherein the folding roller and the lifting roller have an almost identical shape respectively.

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5. The parts supplying system according to claim 2, wherein a crease roller that engages with the released top tape before the top tape comes up to the lifting roller is provided, the crease roller contacts to a surface of the top tape having the adhesive face, and a width of the crease roller is almost identical to a dimension between both collars.

6. A parts supplying method of releasing a top tape pasted onto a carrier tape from the carrier tape to carry when a parts housed in the carrier tape is supplied by feeding intermittently a taped-component, in which the top tape having an adhesive face on both end portions in a width direction is pasted releasably on the carrier tape in which the parts is stored, to a parts supplying position,

wherein a predetermined length of the released top tape is lifted by almost 90 degree to direct respective adhesive faces on both ends of the top tape inwardly, the top tape is folded by tilting a lifted top tape toward a not-lifted top tape, and the folded top tape is fed every predetermined pitch.

7. (Amended)

A parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a winding drum detachably attached to a driving shaft, and
a guide flange formed on one end face of the winding drum and having
an opening portion through which a side surface of the top tape wound on the
winding drum is pushed directly with a finger.

8. (Amended) A parts supplying system according to claim 7,
wherein the reel member includes

a pair of winding drums detachably attached to a driving shaft that
rotates/drives the reel member, having a winding surface on respective outer
peripheral surfaces, and divided in two in an axial direction, one part being
detachably attached to the driving shaft, and

a guide flange formed on one end face of one winding drum,
whereby the top tape is wound on winding surfaces of the pair of winding
drums.”

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9. (Amended) A parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a pair of winding drums detachably attached to a driving shaft that rotates/drives the reel member, having a winding surface on respective outer peripheral surfaces, and divided in two in an axial direction, one part being detachably attached to the driving shaft, and

a guide flange formed on one end face of one winding drum,

whereby the top tape is wound on winding surfaces of the pair of winding drums,

the pair of winding drums have a tapered winding surface whose outer diameter is increased large in a direction that goes away from the guide flange, and

an outer diameter of an end face of the other winding drum opposing to the other end face of one winding drum is smaller than an outer diameter of the other end face of one winding drum.

10. (Amended) A parts supplying system according to Claim 7,

wherein the reel member includes

a winding drum detachably attached to a driving shaft that rotates/drives the reel member and having a recess portion that is hollowed

inwardly in a radial direction in a part of a circumference, and

a guide flange formed on one end face of the winding drum.

11. (Amended) A parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a winding drum detachably attached to a driving shaft that rotates/drives the reel member, and

a guide flange formed on one end face of the winding drum,

whereby the winding drum and the guide flange are bent in removing from the driving shaft to position the winding drum on an inner side and the guide flange on an outer side.

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12. The parts supplying system according to any one of claim 7, 10 or 11, wherein the winding drum has a tapered winding surface whose outer diameter is increased large in a direction that goes away from the guide flange.

13. The parts supplying system according to claim 10, wherein inner wall surfaces opposing to on both ends of the recess portion in a circumferential direction are formed as a tapered surface that expands outwardly in a radial direction.

14. The parts supplying system according to claim 10, wherein an opening portion through which a side surface of the top tape wound on the winding drum is pushed is formed in the guide flange, and

the opening portion and the recess portion are arranged on a straight line in the radial direction of the guide flange.

15. The parts supplying system according to any one of claim 7, 8, 10 or 11, wherein an inner side surface of the guide flange is formed as an inclined surface that reduces a thickness of the guide flange outwardly in the radial direction of the guide flange.